

SECURE PACKAGING AND MAILING CONTAINER**FIELD OF THE INVENTION**

[001] The present invention relates, generally, to the field of shipping and mailing containers and, more particularly, to secure, crush-proof shipping and mailing containers that are easily and efficiently assembled from a unitary, substantially rectangular piece of substrate material.

BACKGROUND OF THE INVENTION

[002] There have been a number of pre-formed shipping and mailing containers that have been developed for use and sale in gift shops and/or department stores for packaging gifts. These boxes are typically formed from multiple pieces of rather thin cardboard material and are generally stored and/or provided in a substantially flat configuration. Boxes presented in this condition permit the user to fold variously configured blanks in order to create either the receptacle or cover portion of a gift box.

[003] The United States Post Office and, more particularly, United Postal Service and Federal Express, have standards that must be met in order that boxes may be used for mailing or shipping. The boxes must be able to withstand certain pressure and drop tests and be fabricated from material having a particular minimum weight. Cardboard gift boxes, of the type typically provided by gift and department stores, do not meet these requirements and must be further packaged in a suitable container.

[004] Additionally, previously available pre-formed boxes do not have any security means associated with their construction or assembly in order to prevent the boxes from being accessed by unauthorized persons. Typically, such boxes, when used as mailing or shipping containers, must be covered in wrapping paper or otherwise secured by application of adhesive tapes about their circumference. The inconvenience and additional work required to put conventional pre-formed boxes into suitable condition for shipping or

mailing makes them particularly unsuitable for use as gift boxes, particularly when it is considered that these conventional gift box sizes do not always fit comfortably within the volumetric requirements of a suitable shipping container. Additional expense and energy is often required to prepare a pre-boxed gift for shipping or mailing. Accordingly, it should be understood that there is a need for a shipping and/or mailing container that is strong enough to meet shipping and mailing drop and crush requirements as well as providing a degree of security in the form of being tamper-evident, if not tamper-proof. Such boxes should be able to support decorative prints on their exterior surface so as to be visually appealing as well as structurally sound.

SUMMARY OF THE INVENTION

[005] It is one of the objects of the present invention to provide a robust and secure shipping container that is reliable and more convenient to use than conventional, flimsy two-part containers. It is another object of the present invention to provide a robust and secure shipping container that complies with United States Post Office Regulations for mailing and with the crush, break and size requirements of commercial international shipping concerns.

[006] It is yet another object of the present invention to provide a robust and secure shipping container that provides improved protection for products within the box as well as provides added security to the contents from unauthorized access by implementing a tamper-proof and/or tamper-evident adhesive.

[007] The present invention comprises of a robust and secure shipping container made of corrugated cardboard, formed from a single piece of corrugated cardboard. The robust and secure shipping container is able to be folded such that there are multiple layers of support at the corners of the container to provide extra strength for protection against crushing. The container is constructed to permit folding in such a way as to be self-locking and has adhesive means applied to anterior surfaces for sealing the container when folded. Pressure sensitive adhesive tape is provided on the inside surfaces of the walls of the

container so that during assembly it is sealable and protected from unauthorized persons or for use in mailing.

[008] In the preferred embodiment, the containers of the present invention have graphics for a suitable occasion, such as for Christmas or a Birthday, and a mailing label printed on the appropriate upper portion of the container so that the container itself can be used directly as the mailing or shipping container without the need for additional wrapping paper.

DESCRIPTION OF THE DRAWINGS

[009] These and other features, aspects and advantages of the present invention will be more fully understood when considered with respect to the following specification, pending claims and accompanying drawings wherein:

[0010] Fig. 1 is a plan view of one embodiment of a material blank suitable for forming a secure shipping container of the present invention;

[0011] Fig. 2 is a plan view of a second embodiment of a material blank suitable for forming a secure shipping container according to the present invention;

[0012] Fig. 3 is a plan view of a third embodiment of a material blank suitable for forming a secure shipping container according to the present invention.

[0013] Figs. 4-8 are semi-schematic perspective views of the folding operations required to assemble the secure shipping container of Fig. 1;

[0014] Figs. 9-14 are semi-perspective views of the folding operations required to assemble the exemplary secure shipping container of Fig. 2;

DESCRIPTION OF THE INVENTION

[0015] Referring now to the exemplary embodiment of Fig. 1, there is depicted a plan view of a material blank indicated generally at 10, used in formation of an exemplary embodiment of a secure shipping container according to the present invention. The material blank 10 is formed from a corresponding stamping dye that presses against a single, unitary piece of cardboard, and which cuts out the perimeter of the blank and forms the scores, holes, and other geometric forms on the blank in a manner well understood in the art of box making. The scores 14 are depressions in the material blank 10 and are conventionally formed by projections on the dye that press into the corrugated cardboard blank sufficiently to form a score or fold line 14, but not pressed sufficiently into the blank so as to cut all the way through the material. Rather, a score compresses the material and forms a weakened line, along which the material may be folded. Cuts 15 are formed by sharpened depressions on the dye that cut all the way through the material of the blank. A slit score 17 is formed by sharpened depressions in the dye that cut through only one layer of corrugated cardboard material, but not all the way through.

[0016] In this regard, corrugated cardboard suitably comprises an outer smooth layer of paper, commonly termed the kraft liner, an interior corrugated or wrinkled layer, referred to in the trade as the medium, and a third layer (commonly an outer or exterior layer) also termed a kraft layer or liner. As will be understood by those having skill in the art, the thickness of the interior layer (the corrugated layer) is known as the fluting. Characteristically, the size of the fluting, i.e., its thickness or more appropriately the height of the periodic corrugations can vary depending upon the strength requirements for the final material.

[0017] Returning now to the exemplary embodiment of Fig. 1, the material blank 10 suitably comprises two segments, a top segment 16 for forming the top and rear portions of a shipping container and a bottom segment 18 for forming the bottom and front portions of the container. The top segment 16 further comprises a generally rectangular portion 19 including side folds 20 and 22 formed parallel to one another which define rectangular side segments 21 and 23 which, when folded, form side walls 24 and 26 for the top segment.

The ends of the rectangular side segments have cuts 27 and 29 and 31 and 33 which, in combination, define end tabs 35 and 37. End tabs 35 and 37 include folds 39 and 41 which define their plane of rotation.

[0018] The side segments include, at ends opposite from the tabs 35 and 37, an arcuate cut forming semicircular tabs 44 and 36 and a closure flap 48. Three parallel and horizontal folds 50, 52 and 54 extending along the length of the upper and lower portion of the top segment and which, when folded, form the rear 55, top 19, and flap 48 of the completed secure shipping container.

[0019] Side panels 24 and 26 include a slit score 17 formed at a diagonal to and extending from the juncture of semicircular tabs 44 and 46 and flap 48, respectively.

[0020] The bottom segment 18 similarly includes a pair of parallel folds 60 and 62 along the sides which form, when folded, the side walls 64 and 66. Extending from the side walls, cuts 68 and 70 are provided which form tabs 72 and 74. The forming dye cuts out triangular segments 76 and 78 between tabs 72 and 74 and the interior front wall 90 in order to promote ease of assembly and folding.

[0021] The bottom segment 18 further includes three parallel folds 80, 82 and 84 which extend transversely from side to side. When folded, these parallel folds define the bottom 86, front 88 and interior front 90 walls of the completed secure shipping container. The interior front wall 90 is slightly shorter in width than the front wall 88 and includes a pair of extending tabs 92 and 94 that are designed to be press fit into corresponding slots 96 and 98 in the bottom of the container for holding the interior front wall 90 in place without requiring use of adhesives, staples, or other securing device.

[0022] Adhesive strips 100 and 102, having removable non-adhesive covers, are provided along a side of each of the side walls 24 and 26 of the upper side walls of the container. Adhesive strips 100 and 102 are preferably comprised of a rubberized adhesive material and are positioned so as to cover not only the side walls 24 and 26, but also the

slit scores 17 that allow the container to be easily assembled. The adhesive material is preferably a rubberized adhesive, such that its bonding strength is substantial, particularly to the materials which comprise the kraft liner of the container. The adhesive material must bond with the kraft liner in such a manner that the liner itself will be defaced or destroyed if the side walls 24 and 26 are attempted to be pulled away from their facing side wall components 64 and 66.

[0023] Utilizing such an adhesive, and positioning the adhesive to cover the slit score 17, as well as extending substantially to the outer edge of side walls 24 and 26, ensures that the container is not only strong, but also secure against tampering. Making the container tamper-evident or tamper-proof, in this fashion, allows the container to be used as a primary shipping or mailing container. No further wrapping nor packaging need be done in order to make the article ready for transit.

[0024] Turning now to Fig. 2, there is depicted a second exemplary embodiment of a secure shipping container in accordance with the invention, which is also formed from a single, unitary piece of corrugated cardboard material. The corrugated cardboard material suitably comprises an outer smoother layer of paper, termed the kraft liner, an interior corrugated layer, referred to in the trade as the medium, and a third layer, the exterior layer, also termed the kraft liner. The material blank depicted in the exemplary embodiment of Fig. 2 is suitably formed from a corresponding stamping die that presses against the unitary piece of cardboard material, cuts out the perimeter of the material and forms the scores, holes and other cuts in the blank as was described above in connection with the exemplary embodiment of Fig. 1.

[0025] The embodiment of Fig. 2 also comprises two segments, a segment that will be used to form the top of the completed container and a second segment that is used to form the bottom, or holder portion of the completed container. The portion forming the bottom or holder of the container suitably comprises generally rectangular surfaces denoted A, A', B, B', C, C', D, E, F, F', G and H. The surfaces are separated and/or delineated by cuts or

scores and define the bottom, front, back and sides of the holder portion of the container as well as closure flaps and reinforcements. The surface D defines the bottom of the container and is separated from the front and back faces (E and H, respectively) by scores or creases 130 and 132. The side flaps, A, B, C and F, are also delineated from the front, back and bottom surfaces by elongated scores 133 and 134 and are separated from one another by cuts.

[0026] Locking slots 137 and 138 are formed midway along the cut separating surfaces B and C, which function to receive and secure locking tabs 135 and 136 disposed along the top surface of a closure flap A and A'. In this regard, it should be noted that the closure flap A and A' is separated from side surfaces B and B' by scores 139 and 140, as opposed to being separated therefrom by a cut.

[0027] With regard to the portion that forms the top of the container, it suitably comprises a top surface I which is delineated from the back of the container by a score 150. A closure lip is formed by surfaces M and N, which are delineated from one another and from the container top surface by scores 152 and 154. The sides of the top are formed by surfaces K and L which, when assembled, define an overhang or lip about the entire periphery of the container cover.

[0028] Suitably, and in accordance with the invention, rubberized adhesive material is applied to the container top side walls K and K' in a manner that substantially covers the side walls. The adhesive material includes removable non-adhesive covers such that the adhesive material can be exposed after the container is assembled and ready for shipping. The adhesive material is rubberized and has a bonding strength to kraft liner such that once the container top side walls K and K' are pressed against the outside surface of the bottom portion sides C and C', the adhesive material forms a tamper-proof or tamper-evident seal between the container top and container bottom.

[0029] It should also be noted that integrity of the assembled container is promoted by providing various locking tabs and the corresponding locking slots in appropriate locations

about the container. As wall segments are folded over one another, and it is desired to keep a particular wall segment in place, so as to secure the container folds, a locking tab is press fit into a corresponding locking slot in order to secure that particular surface from further deflection.

[0030] Referring to Figs. 4 and 5, the assembly of the exemplary secure shipping container of Fig. 1, will be described in conjunction with the plan view illustration of Fig. 1. As shown in Figs. 4 and 5, the tabs 72, 74 are folded along fold lines 116, 118 and the side wall panels of the bottom 64, 66 are folded along folds or scores 60 and 62 until the side walls 64, 66 are perpendicular to the bottom 86. The tabs 72, 74 are folded so that they are perpendicular to both the side walls 64, 66 and the bottom 86. The front wall segment 88 is then folded upwardly until it is also perpendicular to the bottom 86. The interior front wall 90 is then folded along scores 82, 84 so that it overlaps the tabs 72 and 74. The tabs 92 and 94 engage and fit within slots 96 and 98 in the bottom, thereby holding the front 88, 90 and side walls 64, 66 securely.

[0031] Referring to Figs. 6 and 7, the top side walls 21, 23 and the tabs 35 and 37 are then folded along the score lines 20, 22 and 39, 41 until the side walls 21, 23 are perpendicular to the top segment 19, and the tabs 35, 37 are perpendicular to both the side walls 21, 23 and the top 19. The top segment 19 is then folded along score lines 52 and 54 so that the tabs 35 and 37 are flush along the rear wall 55. The side walls 21 and 23 of the top 16 are positioned so as to overlap the side walls 64, 66 of the bottom 86. The top flap 48 is then folded along score line 50 and fitted within the bottom 86 so that it is flush against the interior front wall 90. The folds having been creased, the container defines an interior volume suitable for receiving an object to be shipped. The container is reopened and the object to be shipped is placed within the container.

[0032] Referring now to Fig. 8, once the shipping item is in place, the side walls 21 and 23 are then bent along slit score lines 17 and the ends 44, 46 of the side walls 21, 23 are folded along slit score lines 17 and folds 120, 122 for insertion into the space formed

between the front wall 88 and the interior front wall 90 of the bottom 86. The finger slots 54 and 56 permit the easy opening of the gift box B. By inserting fingers under the finger slots 54, 56 the tabs 44 and 46 may be pulled out and the gift box opened.

[0033] With regard to assembly, and with reference to Figs. 9-14, the assembly of the exemplary embodiment of a shipping container described in connection with Fig. 2 will be described in conjunction with the plan view illustration of Fig. 2. As depicted in the figures, the side surfaces of the bottom portion, A, A', B, B', C and C', are rotated upwardly about 90° along the major scores 133 and 134 so as to be perpendicular to surfaces D, E, G and H. Next, bottom reinforcement surfaces C and C' are rotated, or bent, an additional 90° such that they align to score 130 between the bottom surface D and the back surface H of the container. The surfaces which form the front of the container, i.e., surfaces D, E, F, F' and G are folded upwardly approximately 90° along score 130, such that the interior face of the bottom surface D lies against the exterior faces of the bottom reinforcement surfaces C and C'. To complete the rectangular prism, the container front face E is folded upwardly an additional 90° along score 132 such that it is perpendicular to the bottom surface D.

[0034] Next, and just as the front surface is being rotated, side reinforcement surfaces F and F' are folded 90° inwardly along scores 133 and 134 such that as surface E becomes parallel to bottom surface D, the outside faces of side reinforcement surfaces F and F' lay against the inside faces of side portions B and B', respectively. Side closure surfaces A and A' now fold downwardly, sweeping through about 180°, such that their inside faces lay against the inside faces of side reinforcement surfaces F and F', respectively. As this operation is completed, locking tabs 135 and 136 press into lock slots 137 and 138 which are now disposed at the right angle corner between bottom reinforcement surfaces C and C' and side surfaces B and B'. In so doing, the outer edges of closure surfaces A and A', adjacent lock slots 135 and 136 press against the crease which is adjacent lock slots 137 and 138 and pin the container together by material pressure.

[0035] The final step in completing the holding portion of the container involve folding lock surface G inward along scores 140 and 141, approximately 90°, thereby protruding lock tab 142 in an outward direction, away from the direction of the fold, in order to form a projecting tongue which will engage a corresponding locking tab when the box top is secured.

[0036] The top or cover portion of the container is assembled in substantially similar manner, with front reinforcement surfaces L and L' rotated upwardly along scores 155 and 156. Side pieces K and K' are then rotated upwardly along corresponding scores 151 and 153, thereby positioning the inside edges of front reinforcement surfaces L and L' (defined by cuts 157 and 158, respectively, along the major score 152 which separates the container top surface I from the container front surface M. The container front assembly (comprising surfaces M and N) is folded upward along score 152 and the locking surface N is then folded approximately 180° over the reinforcement flaps L and L' until locking tabs 172 and 173 engage corresponding locking slots 170 and 171 thereby securing the folded material in place.

[0037] In this regard, it should be noted that the front edge of locking surface N is cut in a manner that forms two locking tabs or protrusions 172 and 173 that extend beyond the straight edge of the surface. The cut between locking tabs 172 and 173 is displaced away from the surface's straight front edge such that as the locking surface is folded over and locking tabs 172 and 173 engage corresponding lock slots 170 and 172, the displaced edge 177 is also displaced from score 152 in order that a lock slot is defined in the region between lock slots 170 and 171. As the container cover is closed over the container bottom, locking tab 142 of lock surface G engages the lock slot created by displaced edge 177 of lock surface N, thereby fitting the container together.

[0038] At this time, or just before the container cover is closed over the container bottom, the non-adhesive material is removed from the adhesive strips on the container top side members K and K' and, after the cover is closed over the bottom, pressure is applied

to the outside surfaces of side members K and K' thereby sealing the container against tampering or entry.

[0039] It should be mentioned that the container top portion need not be assembled after the body portion. Indeed, Figs 9-12 illustrate the folding operations of the body portion, while Figs 13 and 14 illustrate the folding operations of the top (lid) portion, without regard to sequence. The operations associated with Figs 13 and 14 may certainly be carried out prior to the operations associated with Figs 9-12.

[0040] It should further be noted that the exemplary embodiments of Figs. 1 and 2 define a shipping or mailing container that has a substantially empty square or rectangular body receptacle. In accordance with practice of principles of the invention, it should be understood that the methodology of container formation and assembly also supports interior detail that is disposed within the receptacle in order to customize the container to hold various articles. This interior detail is also formed from the same unitary piece of cardboard material and is simply manipulated into place by folding the material along predefined scores. An example of such interior detail might be a tray or nest that is configured to hold a certain number of golf ball four-packs, for example. Since the dimension of golf ball four-packs are well understood, and substantially the same from manufacturer to manufacturer, one need only provide a nest or tray with a certain rectangular dimension in order to customize the container as a golf ball gift box, for example.

[0041] In the exemplary embodiment of Fig. 23, an exemplary golf ball container is illustrated which is also formed of a corrugated cardboard blank defined by a corresponding stamping dye that presses against a single, unitary piece of cardboard, and cuts out the perimeter of the blank, forming the scores, holes and other cuts, as described above. The corrugated cardboard material suitably comprises a smooth outer kraft liner, an interior corrugated layer or medium, and an inside kraft liner.

[0042] With regard to the third exemplary embodiment, the top or cover portion, indicated generally at 180, is formed with substantially similar surfaces, scores and cutouts as the top or cover portion of the second exemplary embodiment. Accordingly, corresponding surfaces and scores are indicated with the same reference numerals as those denoted in connection with the second exemplary embodiment. Further, the container bottom surface B_1 is surrounded by side surfaces S_1 , S_2 , S_3 , and S_4 , each of which are separated from the bottom surface by a corresponding fold line or score. The front and back side surfaces S_1 and S_2 terminate to either side by inwardly folding flaps F_1 , F_2 , F_3 and F_4 . As the side surfaces are folded upwardly, the securing flaps are rotated through 90° such that they are perpendicular to their associated side surface and parallel to the next, 90° side surface. Securing tabs T^1 and T_2 are then folded over the flaps and their associated side surfaces S_3 and S_4 until locking tabs 182 and 183 engage lock slots 184 and 185, thereby securing the bottom of the container.

[0043] An interior nest, indicated generally at 186, is suitably formed with three extension leg flaps L_1 , L_2 and L_3 disposed along three of the sides of the nest center. The fourth side suitably comprises the front container surface F_2 , with each of the extension legs having substantially the same width as the container front surface F_2 , such that as the extension legs are folded inward and the nest is tucked into the bottom receptacle of the container, extension legs L_1 , L_2 and L_3 lay against the container side walls and their width suspends the nest in the center of the container receptacle.

[0044] The nest is stamped or cut-out in order to define an interior dimension suitable to receive whatever article is designed to be placed therein. In the case of a golf ball nest, diagonal side cuts may be made in the nest material such that the side cuts may be folded down as a golf ball four-pack is placed within. The flaps designed by the side cuts exert a slight side pressure against the golf ball four-pack, thereby retaining the pack within the nest against movement.

[0045] If it is desired to have any of the shipping containers secured to prevent unauthorized opening or when used as a mailing box, prior to folding the top over the bottom, the adhesive covering would be removed from the pressure sensitive adhesive tapes and then the remaining steps performed as indicated above. Once assembled, the sides, proximate the tapes, are pressed inwardly, pressing the adhesive against the bottom side walls and creating a secured container. The pressure sensitive adhesive or other suitable gluing means could be positioned at other locations to secure the container, but positioning the adhesive along the side walls is preferred, since this orientation allows for a tamper-evident, or tamper-proof seal to be formed.

[0046] The user would now write in the name and address of the person to whom the container would be mailed on the mailing label provided. There would be no need to wrap the container for mailing or gift giving.

[0047] In the preferred embodiment, the assembled container may be any dimension. Where the completed container is thin (has a low profile or aspect ratio) the side walls may be fabricated with a single folded thickness of material. Conversely, where the aspect ratio or profile is large (a tall container) foldable reinforcement surfaces are deployed to give the container a double-wall construction, thereby strengthening the container for crush resistance. In the exemplary embodiments of the invention, the blank medium is E fluting, 200 pound test, and the kraft liners are provided as 42 kraft. In larger boxes, or containers with a higher aspect ratio, B fluting which is a higher medium could be used instead of E fluting.